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BULLETIN  
OF THE  
TORREY BOTANICAL CLUB

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SEPTEMBER, 1922

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New species of trees of medical interest from Bolivia

H. H. RUSBY

The botanical work of the Mulford Biological Exploration of 1921-22 was directed specially toward the investigation of medicinal plants. The distinctly pharmacological features of these plants will be discussed in the medical and pharmaceutical literature, but such unknown species as are encountered should be cited in botanical publications. Two problems of exceptional interest were connected with the botanical origin of the two drugs, "coto" and "cocillana" or "guapi," and their spurious substitutes.

It has never been known what trees yield the coto and paracoto barks, although evident that they pertain to the Lauraceae. For many years, no genuine bark of either has reached our markets, and the use of their worthless substitutes has resulted in destroying the medical reputation of these valuable drugs. Through the careful work of my associate, Dr. O. E. White, of the Brooklyn Botanic Garden, it is now possible to describe the genuine coto tree, as well as its principal substitute, and to provide for the supply of the genuine drug in future. The bark of a second substitute, with leaf-bearing branches, was also collected, but the species cannot be determined from this material, though undoubtedly pertaining to the genus *Nectandra*.

Of cocillana or guapi bark, I collected not only the genuine species, but also the only substitute that has as yet been seen in commerce, besides two other species which, for special reasons, are liable to so appear in future.

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The BULLETIN for August (49: 223-258) was published August 31, 1922.

Those interested further in these subjects should consult future numbers of the Journal of the American Pharmaceutical Association.

***Nectandra coto* Rusby, sp. nov.**

Young parts, inflorescence and lower leaf-surfaces densely and finely yellowish-tomentellate, the twigs stout. Mature leaves, including the petiole, 10–20 cm. long, 3–7 cm. wide, the petiole 2–3 cm. long, stout, sharply channelled above when dry, reddish brown; blade thick and coriaceous, regularly oblanceolate or slightly inequilateral, abruptly very short-pointed, the point acutish, the margin entire and sharply revolute, the upper surface glabrous and lustrous, drying brownish, the midrib reddish and channelled; lower surface pale, the midrib sharply prominent, the secondaries twelve to fourteen on each side, thin and crooked, lightly prominent, lightly anastomosing near the margin, the interspaces faintly reticulate. Inflorescence (very young in my specimen) axillary, the panicles small and loosely flowered, mostly long-peduncled, but shorter than their leaves even when in fruit, the peduncles and their branches coarsely and strongly angled. Bracts broadly ovate, thick, reddish, obtuse. Buds too young for dissection, appearing while the preceding mature fruit is still attached, tomentose. Calyx-limb wholly deciduous in fruit, the base almost concealing the fruit when young. Fruiting pedicel of variable length, thickened upward and becoming continuous with the calyx. Calyx-cup of mature fruit hard and thick, dark brown, roughly tuberculate, especially downward, broadly campanulate or subhemispherical, 2 cm. or more broad, the margin truncate, roughish, single but showing two distinct layers, the light brown fruit slightly projecting when mature, its summit lightly convex, finely granular or lightly mottled, bearing the very short, stout, acute style.

Mulford Biological Exploration Nos. 1048 and 1050. Collected by Dr. O. E. White as "Coto No. 1" (No. 1048) and "Coto No. 1a" (No. 1050), and under the native names "coto piquiente" and "coto fino." Mountains south of Huachi, near the Cochabamba River, Bolivia, at an altitude of 2500 to 3000 feet, September 9, 1921.

Dr. White's field notes are as follows:—

No. 1048.—A tree 50 to 60 feet high, with few branches except near the top and these short in comparison with the height of the tree. Bark of a cinnamon-brown color, peeling with difficulty, aromatic and very pungent, a few seconds after being chewed, the odor pungent when fresh. Wood of a sandal-wood yellow and a satiny luster, the trunk turning brown after being peeled. Leaves whitish beneath, dark- to light-green and glossy above. Young growth cinnamon-brown. Flower buds whitish. Cup of fruit brown-

green with brown spots, the fruit green, evidently of two generations on the same tree.

It is not possible to say with absolute certainty, from specimens collected in this stage of growth, whether this is a species of *Nectandra* or of *Ocotea*. The slender midribs and veins of the leaves are more those of *Ocotea* than of *Nectandra*, but the tomentose flower-buds are characteristic of *Nectandra*, the flowers of *Ocotea* being usually glabrous. There is no species of either *Nectandra* or *Ocotea* with which this can be identified.

***Ocotea pseudo-coto* Rusby, sp. nov.**

Young growth and inflorescence whitish-puberulent, the lower surfaces of the mature leaves minutely and sparsely puberulent, the branchlets elongated and stout, little spreading, deep red, more or less angled. Leaves, including the petioles, 6–12 cm. long, 1.5–3 cm. broad, the petioles 1–1.5 cm. long, deep red, the upper surface nearly plane. Blades thick, oblong, acuminate at base and with a very abrupt short and stout obtuse point at the summit, the margin entire, not revolute, the upper surface brown when dry, glabrous, slightly lustrous, the midrib slightly prominent, sharply so underneath, the six to eight pairs of secondaries slender, ascending, obscurely connecting near the margin. Panicles axillary, less than half the length of their leaves, sessile or subsessile, broad, rather dense as seen in the young state. Bracts thickish, red, broadly ovate. Perigone thin, glabrous, undeveloped in the specimen. The other floral parts are too young for characterization.

Collected by Dr. O. E. White in the mountains south of Huachi, near the Cochabamba River, Bolivia, at an altitude of 2500 to 3000 feet, September 9, 1921. Mulford Biological Exploration No. 1051, collected as "Coto No. 2" and under the name "coto ordinario." It is to be noted that the term "ordinario," as applied by these natives to any substance or article, has the significance that the article is of inferior quality.

Dr. White contributes the following field notes:—

Very large forest tree, growing with Nos. 1048 and 1050 and of the same general habit. Young buds only, and no fruit encountered. Bark thick and easily peeled, not specially aromatic and not pungent. The peeled wood remains white. Wood reddish-white internally.

The same difficulty of identification presents itself with this species as with No. 1050. The buds are a little more developed and the perigone characters are found to correspond with those of *Ocotea*.

The bark of this species is one of those that has very commonly occurred in commerce in this country under both names, coto and paracoto, but sold under either name it is absolutely spurious and medicinally worthless, so far as known.

***Aerodiclidium benense* Rusby, sp. nov.**

Specimen in mature fruiting stage. Glabrous, the twigs numerous, rather slender, terete, densely leafy at the summit. Leaves, including the petiole, 10–15 cm. long, 3–5 cm. broad. Petioles 5–10 mm. long, slender, sharply channelled above. Blades thick and coriaceous, lustrous above, lanceolate, abruptly acuminate at base and summit, with acute apex, the midrib and slender venation scarcely prominent above, sharply so beneath. Principal secondaries five or six on each side, with short intermediate ones, strongly upcurved and connecting near the margin, the reticulation fine and sharp. Margin entire, very slightly revolute. Panicles axillary, less than half the length of their leaves, stoutly peduncled, having one to four shortly and stoutly pedicelled fruits, the pedicels strongly thickened upward. Calyx-cup subhemispherical, about 1.5 cm. broad, hard and thick, heavily wrinkled, its truncate summit with thin, sharp margin projecting slightly beyond the strongly recurved limb so as to form a double mouth, the limb thin, irregularly crenate-dentate. Fruit about 2 cm. long and two-thirds as broad, oval to ovoid, light brown, glabrous, strongly wrinkled at the base and very shortly stipitate, the rounded summit topped by the very short stout style.

Collected by Dr. O. E. White at the second portage of the Bopi River, Bolivia, at an altitude of about 2000 feet, August 8, 1921. Mulford Biological Exploration No. 649.

Dr. White says: "A small evergreen tree 20 to 30 feet high, trunk 6 inches in diameter, growing in damp, partly shady places near the river bank. The fruit is green with white specks, the cup brilliant scarlet-red. Not common."

***Guarea Bangii* Rusby, sp. nov.**

Only fruiting specimens seen. Glabrous, with the exception of the tomentose fruit, pedicels and peduncles, and a very slight short, sparse pubescence on the leaf rachis, petiolules and lower surface of the midribs. Rachis and petiole subterete, slender, together 7–20 cm. long, the petiole varying from one-eighth (in the larger leaves) to one-half (in the smaller ones) of the total length. Leaflets three to five pairs, opposite, the lower successively much smaller, 7–20 cm. long, including the petiolule, which is one-tenth to one-fifth of the total, 3–7 cm. wide, thin, pale green, oblanceolate, acute at the base, the summit very

abruptly contracted into a short and broad, mostly obtuse acumination, the margin entire and not revolute. Midrib usually slightly furrowed on its upper surface toward the base, underneath prominent and slender, like the seven to twelve pairs of mostly opposite secondaries, which are strongly up-curved near the margin, where they are obscurely confluent. Fruit-panicles much shorter than their leaves, sessile or subsessile, rather densely fruited, the rachis and pedicels very stout, the latter little longer than broad, annular-roughened, articulated with the very short stipe of the fruit, which is not so thick as its pedicel. Mature fruit usually a little more than 2 cm. long and nearly or quite as broad, pear-shaped when young, becoming nearly spherical, except for the narrow base, which remains unchanged to form a short thecophore. Body of fruit obscurely costate or striate, tubercular-roughened and softly and finely tomentose.

First collected by Mr. Miguel Bang, on the hills near Tipuani. Collected also by H. H. Rusby in October, 1921, on the Mulford Biological Exploration, at Rurrenabaque, Bolivia, Nos. 779 and 1590; also No. 2178 ("Guapi B"). All the spurious cocillana bark that has reached our market up to the present has been derived from this species.

A good-sized forest tree of the Mapiri and Beni River region, growing mostly on the hillsides in relatively dry soil, the bark roughly striate and shreddy, and peeling in long, fibrous, thin strips.

***Guarea alborosea* Rusby, sp. nov.**

Glabrous, the petiolule and lower surface of midrib finely verrucose or papillose in the dried state. Petiole and rachis rather stout, deep purple, together 2-4 dm. long, the petiole about one-fifth of the total length, flat on the upper surface, the leaflets five to ten pairs, nearly opposite, the lower somewhat smaller. Petiolules 4-8 mm. long, stout, lightly channeled above, like the midrib. Blades 10-20 cm. long, by 4-8 cm. wide, thickish, pale underneath, oval or slightly narrower either below or above the middle, the base rounded or obtuse, the summit very abruptly contracted into a short, narrow, acute point, the margin entire and not revolute, the venation not at all prominent above, sharply so underneath, the secondaries ten to fifteen on a side, not opposite, straight and slender, moderately spreading, falcate toward the margin, connected by the coarsely reticulate tertiaries. Inflorescence axillary, racemose, simple, or occasionally slightly branched at the base, the racemes recurved-pendulous, often 2-3 dm. long, 1.5-2 cm. broad, densely flowered, the rachis slender, strongly nodose by the flower-scars, the bractlets minute, the flowers divaricate. Pedicels slender, articulated

into the broad concave base, the pedicel proper scarcely one-fifth the length of the flower, obscurely angled. Unopened calyx not seen. Mature flowers about 6 mm. long the erect unexpanded corolla 2.5-3 mm. broad. Calyx crateriform, 3 mm. broad, closely investing the base of the corolla, deeply four-lobed, the lobes thick, purple, broadly ovate and obtuse. Petals 6 mm. long, 2 mm. broad, oblong, obtuse, slightly thickened at the purple or rose colored summit, the basal portion white. Stamen-tube three-fourths the length of the petals, broadly sulcate, slightly contracted below the mouth, which is not quite so broad as the lower half, the margin shallowly eight-crenate, the small anthers equalling its lobes. Ovary and style appressed-pilose, the ovoid ovary about equalling the stout style in length, the latter reaching the summit of the tube. Immature fruit fig-shaped, abruptly contracted at the base, then tapering into the stout short pedicel. Mature fruit not seen.

A small tree in the forest at Rurrenabaque, Bolivia, at an altitude of about 1000 feet. Collected by H. H. Rusby in flower and fruit, on the Mulford Biological Exploration, October 6, 1921 (No. 797).

The species is peculiar in its very long slender raceme and in the handsome rose and white coloration of its flowers.